



PALEONTOLOGICAL TOURISM:
AN ALTERNATIVE INCOME TO VERTEBRATE PALEONTOLOGY ¹
(With 3 figures)

MARÍA MAGDALENA PERINI ^{2, 3}
JORGE ORLANDO CALVO ^{2, 4}

ABSTRACT: In the Centro Paleontológico Lago Barreales, Neuquén Province, paleontological tourism is in permanent development due to the activities related to The Dino Project. This place is the first paleontological tourism center with educational purposes that uses the resources obtained to finance the scientific research carried out in the area. We have defined three categories of paleontological tourism: the simple visit to a museum, or Classic Paleontological Tourism (CPT); the visit of site museums, or External Paleontological Tourism (EPT), and the Alternative Paleontological Tourism (APT), that comprises the interaction between the visitor and the specialists at the site, as well as the direct participation of the visitor in the technical paleontological work and in research activities. We consider that paleontological tourism in Neuquén Province helps not only to preserve the patrimony and to divulgate the cultural and educational importance of fossils to the general public, but also to collect funds to maintain The Dino Project alive.

Key words: Paleontological Tourism. Education. Neuquén Province. The Dino Project. Tourism categories.

RESUMO: Turismo Paleontológico: uma alternativa rentável para a Paleontologia de Vertebrados.

No Centro Paleontológico Lago Barreales, Província de Neuquén, o turismo paleontológico está em desenvolvimento permanente devido às atividades relacionadas ao Projeto Dino. Neste local encontra-se o primeiro centro de turismo paleontológico com objetivos educacionais que utiliza os recursos obtidos para financiar a pesquisa científica realizada na área. Nós definimos três categorias de turismo paleontológico: a simples visita a um museu, ou Turismo Paleontológico Clássico (CPT, Classic Paleontological Tourism); a visita a museus localizados no próprio afloramento, ou Turismo Paleontológico Externo (EPT, External Paleontological Tourism), e o Turismo Paleontológico Alternativo (APT, Alternative Paleontological Tourism), que compreende a interação entre o visitante e os especialistas no local do afloramento, assim como a direta participação do visitante no trabalho técnico paleontológico e em atividades de pesquisa. Nós consideramos que o turismo paleontológico na Província de Neuquén ajuda não apenas a preservar o patrimônio e a divulgar ao público em geral a importância cultural e educacional dos fósseis, mas também a arrecadar fundos para manter vivo o Projeto Dino.

Palavras-chave: Turismo Paleontológico. Educação. Província de Neuquén. Projeto Dino. Categorias de Turismo.

INTRODUCTION

Tourist activities are developed when, for example, a natural, cultural, and social tourist resource together with the motivation of the visitors (tourists or not) that go to a certain place to relax or to get acquainted with this resource is present.

The aim of paleontological tourism is to provide the visitors the knowledge about this science as well as the necessary materials to carry out the scientific study. In fact, Paleontology is considered a resource that really motivates not

only the visit of local people but also of those who come from very distant places. For this reason, one of the paleontologists' objectives is to encourage heritage preservation. Therefore, as WEARING & NEIL (2000) points out when discussing about ecotourism, paleontological tourism implies "the management and control, by human beings, of the use of resources (biotic and abiotic) as well as the activities carried out in the planet, trying to restore, improve, protect and maintain, in qualitative and quantitative terms, a desirable mixture of species, ecosystems conditions and processes to be

¹ Submitted on September 14, 2006. Accepted on November 28, 2007.

² Centro Paleontológico Lago Barreales (CePaLB). Universidad Nacional del Comahue. Dino Project, Provincial Road 51, km 65, Neuquén. Argentina.

³ E-mail: magdalenaperini@yahoo.com.ar

⁴ E-mail: jocalvo40@yahoo.com.ar.

enjoyed not only by current generations, but also by future ones". From this point of view, tourism activities are developed in paleontological sites where the fossils found or under investigation are of interest.

In Argentina, the extremely important discoveries made in the Lago Barreales paleontological site since 2000, made it possible to create the Dino Project in 2001 and, as a result of it, in 2002, the first South American *in situ* fossil theme scientific and educational center - The Centro Paleontológico Lago Barreales. It is located 90km away from Neuquén, Patagonia, and its staff has been working to gather the pleasure of a tourist visit with the education of Paleontology. In this place the paleontological tourism is permanently developed.

Fossils in Argentina are protected by paleontological heritage laws. Only one of them is of national coverage (The National Act 25743/03) and the others are specifically of each state. In Neuquén state governs Provincial Act 2184/96 with its regulation decree N°2711/97. By these laws, all fossils are legally protected as they belong to the Nation or to the Provincial State. Museums are just a repository of this heritage. In other words, the care, the study, the protection, and the exhibition of the fossils are the State's responsibility. The problem is that there is no enough funding for the development of those activities. On the other hand, the resources obtained by museums from the received visits are not reinvested in scientific research. They are used to subsidize the maintenance of the buildings.

As the example of Sian Ka'an Biosphere Reserve (CEBALLOS LASCURIAN, 1987), a small ecotourism and education center in Mexico, the Centro Paleontológico Lago Barreales, by the development of the Dino Project's activities, use the revenue generated through visits to fund a conservational and educational program within the Lago Barreales site. This reinvestment allows the improvement of the investigation activities.

MATERIAL AND METHODS

In Neuquén Province, it is possible to see

paleontological exhibits in five museums: Museo Ernesto Bachman, Museo Municipal Carmen Funes, Museo Municipal Argentino Urquiza, Museo Prof. Juan Olsacher, and Museo de Geología y Paleontología. Particularly, the Museo de Geología y Paleontología of the Universidad Nacional del Comahue, at Lago Barreales area, exhibits a wide collection of dinosaurs and mesozoic reptiles and it represents the unique permanent dinosaur digging accessible area to the general public. The fossils housed at this museum and the Project Dino as a whole are the object of the alternative income study here presented.

RESULTS AND DISCUSSION

MUSEUMS IN THE NEUQUÉN PROVINCE

In the Neuquén Province, there are five museums that exhibit paleontological materials: the Museo Ernesto Bachman which is located at Villa El Chocón town and exhibits, among others, the original fossil remains of the famous carnivorous dinosaur *Giganotosaurus carolinii*; the Museo Municipal Carmen Funes which is located at Plaza Huincul city and exhibits, among others, the replica of *Argentinosaurus huinculensis*, the biggest herbivore dinosaur in the world; the Museo Municipal Argentino Urquiza which is located at Rincón de los Sauces city and exhibits original pieces and replicas, mainly of titanosaurids; the Museo Prof. Juan Olsacher which is located at Zapala city and exhibits Mesozoic marine reptiles and invertebrate material; and the Museo de Geología y Paleontología which is part of the Universidad Nacional del Comahue and is located at the Lago Barreales area, 90km away from Neuquén city. It exhibits a wide collection of dinosaurs and mesozoic reptiles.

The laboratories and exhibition rooms in there are the physical places where one can generally be in contact with the fossil material which are occasionally shown to the public. If these institutions do not count with an appropriate space, and the staff is not adequately trained for curatorial activities, the functions of the museums are really affected and fossils are at

the risk of being damaged or lost. So, to maintain those repositories of fossil collections there is a need of permanent financial resources. However, most of the time the institutions face a scarcity of resources to preserve the heritage. In general, funds obtained are only sufficient to be applied to the maintenance of the buildings in order to keep the museums opened. Unfortunately, the resources are generally not sufficient to be directed to the reinvestment in scientific investigation. This situation occurs since funds are not subsidized by other entities, either the state or private ones. As a result, the paleontological heritage on the field is in constant dangerous situation and so are the fossil collections and research, activities that sometimes cannot be maintained.

The Museo de Geología y Paleontología is the only museum among the five located on the Neuquén Province that proves to be in a different condition due to the Paleontological Tourism developed in the Lago Barreales site.

THE PALEONTOLOGICAL TOURISM

Since the terminologies "Visit a museum" and "Paleontological Tourism" are commonly used in a wrong and confused way, we have defined three categories of paleontological tourism. The visit to a Museum is defined as the Classic Paleontological Tourism (CPT) (PERINI & CALVO, 2005). An alternative of this kind of tourism is to visit "*in site*" museums, with static paleontological sites as, for example, the Valle de la Luna (Moon valley) in San Juan, or dinosaurs' footprints in Neuquén, both in Argentina. We have defined this tourism activity as External Paleontological Tourism (EPT) (PERINI & CALVO, 2005) since these sites in general depend on some established museum and are included as an extra visit.

The third category here defined is the Alternative Paleontological Tourism (APT) (PERINI & CALVO, 2005) in which the paleontological tourism is shown in all its branches. It is considered a special kind of tourism that consists in the visitor's interaction with the science of Paleontology and the paleontological work itself. In this sense, the site is the key factor when planning the development of this activity. This kind of tourism can be defined as the visit to a

paleontological site with the intention of learning and interacting with fossil remains. During the visits, besides the pleasure of the touristic activity, it is simplified the learning of the fossil's scientific value, its importance and its necessary protection. Nowadays, the Alternative Paleontological Tourism is carried out for few days in a year in few places in South America. However, in Centro Paleontológico Lago Barreales this is a constant activity due to the development of the Dino Project.

As the name suggests, the Paleontological Tourism is only developed in paleontological sites and it has educational and recreational purposes. It means that a fossiliferous site must be put in value in order to be used for tourist activities. In this sense, a site is the key factor when planning the development of this activity.

Considering the three presented categories, it is considered that the real Paleontological Tourism is the Alternative one. It consists in the visitor's participation in the excavations, fossil preparation and in getting acquainted with different methods of investigation and scientific information related to the fossil material and paleoenvironmental conditions.

In general, the activity is centered on the cohabitation with the scientific team, on the interaction with technicians and paleontologists, and on the learning of the techniques applied. The tourist participates in all the activities related to the field work, from putting up the bivouac to loading the truck with plaster jackets. The paleontologist's function is to distribute the cleaning tasks and the tourist's participation will depend on their working skills. In fact, this is an important detail, since those who are not capable of handle the materials, specially the delicate ones, cannot participate in this kind of activity. The priority is the fossil preservation and not the visitors self pleasure. It is the paleontologist who is in charge of the excavation and responsible for the scientific work that must evaluate the conditions.

THE PALEONTOLOGICAL TOURISM INTO PRACTICE

Since 2002, in the Neuquén province, Argentina, there is a site in which the APT is permanently carried out. It is placed in the north coast of Lago Barreales, about 90km (60 miles) northwest of the city of Neuquén. The activities developed in

the site are related to the Dino Project, a project that is considered a prototype in paleontological tourism practice.

The Centro Paleontológico Lago Barreales is the first paleontological tourist center with educational purposes. Paleontologists that carry out their task of investigation allow the participation of visitors whose main interest is to learn about this specific subject and to take part in the paleontological world

The interest of those who carry out this work is to spread the importance of the development of this science, as well as to collect funds to finance the paleontological scientific researches.

SPONTANEOUS TOURISM

The fossil discoveries in Lago Barreales during the development of Dino Project, their preservation, and their importance, were the paleontological novelty of 2002, in Argentina (POBLETE & GOMES, 2002). In the weekends of February, 2002, while the works in the location were being carried on, the first onlookers arrived. At the beginning of the following month, on March, 2002, the number of visitors gradually increased. By that time, the weekends were completely dedicated to a guide tour for the visitors. Besides, the schools of the area also became interested in visiting the site, and they did it during weekdays. For this reason some spontaneous circuits had to be established. Then, the circuits and paths had to be strategically devised to turn the visit to the site enjoyable (PERINI, 2003).

Along with the tourists, private companies began to collaborate with the rescue. So that, the Universidad Nacional del Comahue, the visitors and the private companies helped Dino Project to be a success and a tourist educational alternative (CALVO *et al.*, 2002).

OUR VISITORS

Almost 50.000 tourists have visited the excavation until last August 2006, turning Dino Project into the most visited dinosaur excavation of South America until that year. According to our guest book, visitors come in groups of an average of 15 people, mainly families, groups of friends or students. Their

interest ranged from sightseeing, carrying out recreational activities, acquiring knowledge, and interacting with the team of technicians and paleontologists.

During the time spent in the center the visitor can interact with the technicians allowing them to become familiar not only with the paleontological work, but also with its cultural and scientific importance. They can also to learn how to protect this heritage of mankind. The fossil material is shown in a double function room, being at the same time a laboratory and a show-room. This is the guarantee that the information given to the visitors is always up to date. The average time of the visit is three hours, depending on the circuit to be chosen. In all cases, visitors are guided by a member of the team. Those who came to the site recognized that it is not frequent to find this kind of organized touristic development with educational purposes and considered these visits of a great valuable educational time.

In order to visit and complete the circuits, tourists have to pay a fee. These resources are exclusively directed to scientific investigations that range from excavation materials to supplies required by the scientist. Several paleontological fieldtrips can now be financed thanks to the income generated by tourism, whereas in the past they could not be launched due to the lack of funding or to the money shortage usually provided by annual subsidies of the state. As a result of the Paleontological Tourism activities, it is possible to guarantee the continuity of the paleontological work for a long time in the future.

CONCLUSION

The Centro Paleontológico Lago Barreales is the first South American *in situ* fossil theme scientific and educational center that joins touristic and paleontological permanent activities. In what concerns the diffusion of the paleontological knowledge the Dino Project showed of great importance since the information offered is not only related to the fossil material (sometimes so fragile) and its preservation, but also to the environmental conditions in which the local species coexisted with. Besides the University and private

companies help, the obtained incomes generated by tourism made possible to get the necessary funds to finance several paleontological needs such as equipments for fieldtrips and laboratories. Otherwise, these funds are also essential to the development of scientific researches.

The interaction between Paleontology and Tourism is now considered a valid alternative to spread the importance of preserving and protecting the heritage and as an alternative income to vertebrate paleontology. Finally, we understand that paleontological resource must not be used with touristic ends if it does not favor its protection and sustainable development.

This initiative requires a great effort and in the case of the Centro Paleontológico Lago Barreales its organization is the responsibility of a Public University and a team of people that considers that the passion is the main engine to carry out a scientific-touristic activity.

ACKNOWLEDGEMENTS

The authors want to thank those who made possible and provided funds to the development of the Dino Project: Duke Energy Argentina, Pan American Energy, Andean Kralj SRL, Repsol-YPF, Ecosistemas Patagónicos, Topsy SA, Skanska SA, Unifon SA, Almaco SA, Diario la Mañana Neuquén, Municipalidad Añelo, Comunidad Mapuce Paynemil, Neunet, Club Mari Menuco, Cofruva SA, Union de Empresarios Neuquinos, Petrobrás, Project T-021 Universidad Nacional del Comahue, and Chevron-Texaco. Project ANC y T PICT - IDB 802/OC-AR-PICT-07-08277.

REFERENCES

- CALVO, J.; PORFIRI, J.; VERALLI, C.; POBLETE, F. & KELLNER, A., 2002. Futalognko Paleontological site, one of the most amazing continental environment of Patagonia, Argentina. In: CONGRESO LATINOAMERICANO DE PALEONTOLOGÍA DE VERTEBRADOS, 1., 2002, Santiago de Chile. **Resúmenes...** Santiago de Chile: Universidad de Chile. p.19-20.
- CEBALLOS-LASCURÁIN, H., 1987. Estudio de prefactibilidad socioeconómica del Turismo Ecológico y anteproyecto arquitectónico y urbanístico del Centro de Turismo Ecológico de la Reserva de la Biósfera Sian Ka'an, Q.R.; México. **Estudio para SEDUE**, México, DF.
- PERINI, M.M., 2003. La necesidad de crear el area paleontológica protegida en la costa norte del lago Los Barreales. In: CONGRESO ANUAL DE LA ASOCIACIÓN ARGENTINA DE CENTROS DE ESTUDIOS CANADIENSES: "Las Areas Protegidas y la Gente", 4., 2003, Neuquén. **Anales...** Disponible en CD Rom. Ponencia 20.
- PERINI, M.M. & CALVO, J.O., 2005. Turismo Paleontológico: una alternativa de ingresos a la Paleontología de Vertebrados. In: CONGRESO LATINOAMERICANO DE PALEONTOLOGIA DE VERTEBRADOS, 2., 2005, Rio de Janeiro. **Resúmenes...** Rio de Janeiro: Museu Nacional, Universidade Federal do Rio de Janeiro. p.200-201.
- POBLETE, F. & GÓMEZ, E., 2002. Extracción de una cadera gigante y una secuencia dorsal articulada en Sitio Futalognko, Neuquén. Argentina. In: CONGRESO LATINOAMERICANO DE PALEONTOLOGÍA DE VERTEBRADOS, 1., 2002, Santiago de Chile. **Resúmenes...** Santiago de Chile: Universidad de Chile. p.60.
- WEARING, S. & NEIL, J., 2000. **Ecoturismo, Impacto, tendencias y posibilidades**. Madrid: Editorial Síntesis. 272p.